DIGITAL PEDAGOGICAL TRANSFORMATION IN ISLAMIC EDUCATION LEARNING: A STUDY AT MADRASAH TSANAWIYAH IN JAMBI CITY

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ABSTRACT

Digital pedagogical transformation has become an urgent need in the world of education, including in Islamic Religious Education (PAI) learning in madrasas. This study aims to explore the implementation of digital pedagogical transformation in PAI learning in Madrasah Tsanawiyah (MTs) in Jambi City, as well as to identify supporting factors, obstacles, and teacher and student perceptions of the process. Using a mix-method research method, a qualitative approach with a case study method, data were collected through in-depth interviews, observations, and documentation in several selected MTs and analyzed with a quantitative approach. The results of the study indicate that digital pedagogical transformation has been carried out through the integration of digital media, online learning platforms, and the implementation of a blended learning model, where statistical analysis in the use of digital media on the learning process amounted to 0,001. The main supporting factors include madrasah policy support and increasing teacher digital literacy, while the main obstacles are limited infrastructure and human resource readiness. In general, teachers and students showed a positive response to the use of digital technology in PAI learning, although ongoing training and technical assistance are still needed. This study recommends strengthening teacher training strategies and providing adequate digital resources to support the sustainability of digital pedagogical transformation in madrasas.

Keywords: Digital Transformation, Pedagogy, Islamic Religious Education, Junior High Madrasas, Jambi

BACKGROUND

The development of digital technology in recent decades has brought about major changes in almost every aspect of human life.(Kumari & Ul Oman, 2024). The presence of the internet, smart devices, and digital-based applications has revolutionized the way people work, communicate, access information, and even conduct their daily activities. The world of education has not escaped the impact of this transformation. (Teodorescu et al., 2023).Digitalization has shifted the learning paradigm from conventional, face-to-face, and teacher-centered learning to more flexible, interactive, and technology-based learning.(Raya, 2025).With the presence of various e-learning platforms, interactive media, and communication technologies, the teaching and learning process can now take place anytime and anywhere.(Haleem et al., 2022; Khamparia & Pandey, 2017). Teachers are no longer the sole source of

information, but rather act as facilitators, guiding students in exploring knowledge from various digital sources. Meanwhile, students are required to have digital literacy to be able to use technology wisely and productively in their learning process.(Afriani et al., 2025).This transformation also brings new challenges, such as the need for adequate infrastructure, improving the digital competence of educators, and disparities in technology access in various regions. However, overall, the development of digital technology has opened up significant opportunities to create an education system that is more inclusive, adaptive, and in line with the demands of the times.Islamic education in Islamic Junior High Schools (MTs) plays a crucial role in the character formation and Islamic values of students at the junior high school level. Amidst the rapid development of information technology, MTs are faced with the demand for digital transformation, not only in terms of school administration and management, but also more deeply in terms of pedagogy. This digital pedagogical transformation demands changes in teaching methods, material development, and learning strategies that integrate Islamic values with modern technology in a relevant and meaningful way.However, this process is not without challenges. Many MTs still face limitations in digital infrastructure, such as unstable internet access, a lack of technological devices, and a lack of adequate training for teachers. Furthermore, some Islamic Religious Education (PAI) teachers have not fully mastered digital-based pedagogical approaches, resulting in predominantly traditional learning practices.Furthermore, ideological and cultural challenges arise, with some still skeptical of technology in the context of religious education. In fact, when used appropriately, technology can be an effective means of conveying Islamic teachings in a more engaging way that aligns with the needs of the digital generation.(Muh Ibnu Sholeh, 2023). Therefore, the transformation of digital pedagogy in Islamic education at MTs requires a shared commitment from teachers, institutions, and the government to create a modern learning ecosystem that remains grounded in Islamic values.In the ever-evolving digital era, the role of teachers is no longer limited to conventional delivery of material, but rather must be able to become facilitators, innovators, and managers of learning that adapts to technology. This is increasingly important in the context of Islamic Religious Education (PAI) learning, which has historically been synonymous with traditional, textual, and memorization-centered approaches. To meet the challenges of the times and meet the needs of the digital generation, PAI teachers are required to be able to adapt digital-based pedagogical approaches effectively while maintaining the essence of Islamic values in the learning process.

Understanding how PAI teachers adapt digital approaches is crucial. This encompasses not only the extent to which they utilize technological tools such as learning applications, interactive media, and online platforms, but also how they develop strategies, methods, and evaluations that are appropriate to the characteristics of Islamic material and the needs of today's students.(Zuliana et al., 2023). Each teacher has a different approach to digital transformation, depending on their background, digital competency, and the support of the school environment. In line with the demands of educational modernization and the integration of technology into the learning process, (McCarthy et al., 2023), Islamic schools, particularly junior high schools (MTs), are being encouraged to undertake digital transformation in various aspects, including their pedagogical approaches. Amidst this digitalization spirit, it is crucial to conduct a comprehensive study of three key aspects: readiness, obstacles, and strategies used by Islamic schools in undertaking this transformation process.Madrasah readiness encompasses the extent to which supporting infrastructure is available, such as internet access, digital learning tools, and teachers' digital competency. Without adequate readiness, digitalization has the potential to become merely a formality without a significant impact on the quality of learning. Therefore, a more in-depth study of digitalization in the learning process is necessary to assess not only the extent to which technology has been used, but also how its application can improve the effectiveness and understanding of learning materials for students.(Kraus et al., 2021).This study is crucial considering that digital transformation involves not only replacing conventional learning tools or media with technology-based ones, but also encompasses a paradigm shift in pedagogical approaches. Effective digitalization requires integration between technology, teaching methods, and the substance of learning materials, so that the learning process is not only more engaging and interactive, but also in-depth and meaningful.In the madrasah context, this transformation also needs to consider the Islamic values that underlie Islamic education. Therefore, the application of digital technology must align with the goals of Islamic education, namely to develop individuals with faith, knowledge, and morals. This

study aims to identify the extent to which digital pedagogical transformation has taken place in Islamic junior high schools (Madrasah Tsanawiyah) in Jambi City and analyze the factors that support and hinder this process. It is also hoped that this research will provide strategic recommendations for developing more effective and contextual digital learning policies and practices in madrasas.

RESEARCH METHOD

This study uses a mix-method,(Kasakewitch et al., 2025), qualitative approach (Lim, 2025), with a case study type. The focus is to understand how digital pedagogical transformation occurs in the context of learning at Madrasah Tsanawiyah in Jambi City including how teachers, students, and stakeholders (madrasah principals, supervisors, parents) understand, accept, implement, as well as the challenges and opportunities that arise. Next there is an analysis for the level of influence of digitalization in the learning process. The case study design allows for in-depth exploration of processes, practices, and real experiences in the field. Location and Subjects of the Study, Several Madrasah Tsanawiyah in Jambi City (State Madrasah Tsanawiyah 1 Jambi City, Private Madrasah Tsanawiyah Laboratorium Jambi City, State Madrasah Tsanawiyah 2 Jambi City) The research subjects consisted of Islamic Education Teachers / PAI teachers who teach at the Madrasah Tsanawiyah Students in grades VII-IX, Madrasah Principals. Sampling Technique, Purposive Sampling, which Selects madrasas and teachers who have started implementing digital technology in the learning process (including those experiencing challenges), so that the data obtained is rich and relevant. Data was collected through several Techniques, In-depth interviews: With teachers, students, madrasah principals; discussing perceptions, experiences, practices, obstacles, and strategies used in digital transformation. Participatory / non-participatory observation: Directly observing the learning process of how technology is used in the classroom (use of applications, digital media, blended learning, videos, digital quizzes, LMS / online platforms). Documentation: Analysis of supporting documents such as syllabi, lesson plans (RPP / RKM), digital materials that have been created, madrasah policies regarding the use of technology, learning evaluation reports. (Optional) Questionnaires / surveys: to obtain a quantitative (Reads, 2019), picture of the supporters and influence of the use of digital media in the learning process

DISCUSSION

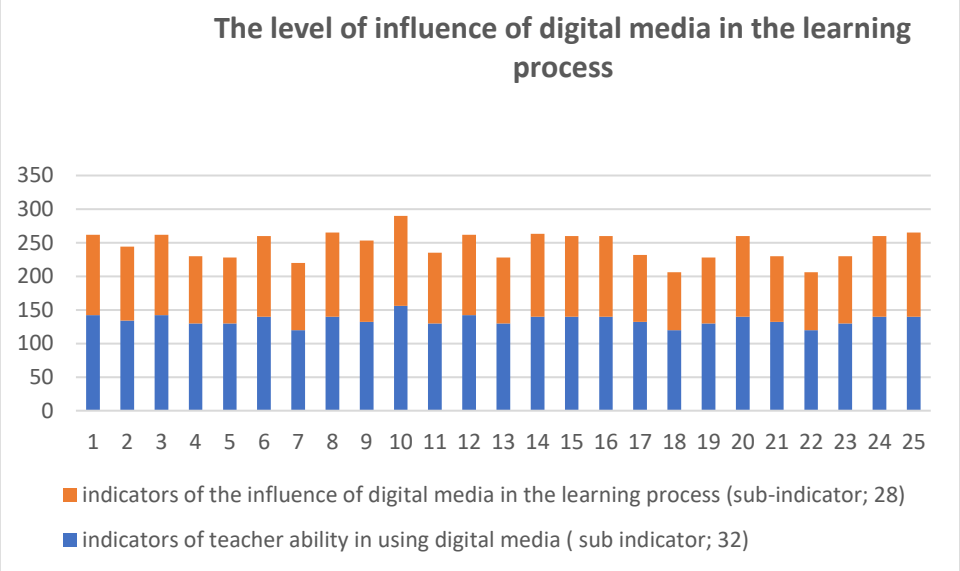
The form of digital pedagogical transformation in Islamic Religious Education learning at Madrasah Tsanawiyah in Jambi City

The development of digital technology has brought significant changes to various aspects of education, including learning.(Kurniawan S. Djibran et al., 2024). Field observations and interviews with several Islamic Religious Education (PAI) teachers at Islamic Junior High Schools (Madrasah Tsanawiyah) in Jambi City reveal that this digital pedagogical transformation not only provides more interactive and engaging teaching methods but also expands access and enriches learning resources for students.One of the most visible forms of transformation is the use of digital learning media, such as instructional videos, interactive modules, and mobile-based applications, which facilitate students' understanding of religious concepts in a more contextual and communicative manner. PAI teachers now integrate technologies such as PowerPoint, e-learning platforms, and social media as a means to deliver material flexibly and adaptively to students' needs.Furthermore, learning models that were previously one-way have become more participatory and collaborative with the help of digital technology. For example, online group discussions, interactive quizzes, and digital project-based assignments involving the use of online resources can increase active student engagement. This approach encourages students not only

to acquire knowledge but also to develop critical and reflective thinking skills regarding the Islamic values they are learning.The transformation of digital pedagogy also makes it easier for teachers to monitor and evaluate learning in real time through digital learning platforms. This allows for more personalized and effective adaptation of teaching methods and accelerates feedback for students to improve their understanding.(Huang et al., 2024).However, despite this convenience and innovation, challenges such as limited access to technology in some areas, teacher readiness to master technology, and the risk of digital distractions must also be addressed. Therefore, the transformation of digital pedagogy in Islamic Religious Education (PAI) learning at Madrasah Tsanawiyah (Islamic junior high) in Jambi City must be accompanied by ongoing teacher training and adequate infrastructure support.

The level of influence of digital media in the learning process

The development of digital media has had a significant impact on the learning process at various levels of education. Based on interviews and field observations, digital media, including learning software, e-learning platforms, interactive videos, and social media, has transformed the way teachers and students interact and deliver learning materials.(Budiarto et al., 2025; Neeraj Yadav, 2024).Based on the results of the questionnaire, the influence of digital media on learning can be seen from several aspects. First, digital media increases the accessibility of information. With the internet and various learning applications, students can access learning materials anytime and anywhere, so the learning process is no longer limited to classrooms and conventional lesson hours.Second, digital media enables more interactive and engaging learning. The use of videos, animations, online quizzes, and simulations helps students grasp abstract concepts more easily and enjoyably. This can increase student motivation and retention.Third, digital media also plays a role in facilitating independent and collaborative learning. Students can learn individually at their own pace through digital modules, while also engaging in online discussions and group projects that strengthen their understanding and social skills. The data from the questionnaire results are presented in Table 1 below, The data above provides an explanation, where



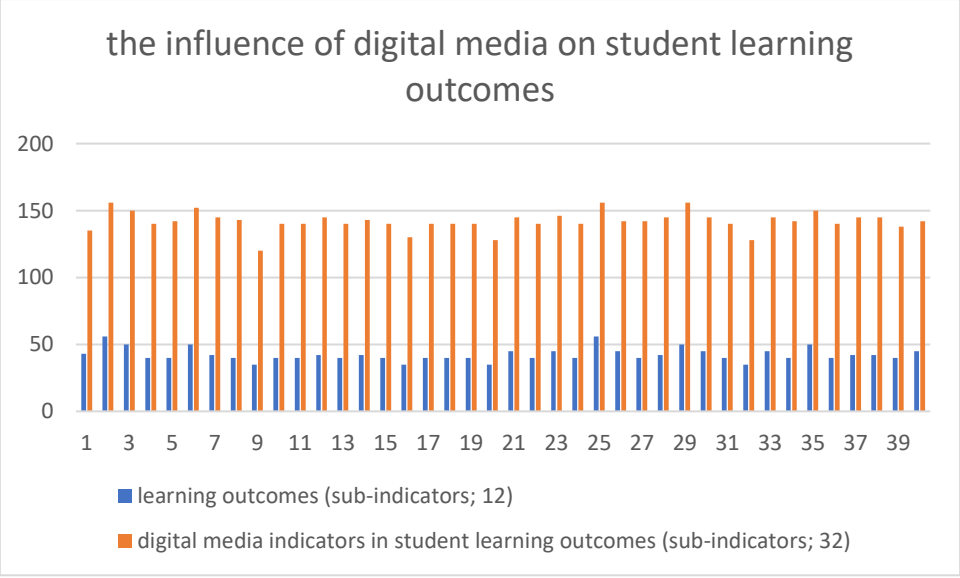
Indicators of teacher ability in using digital media; **indicators**; Ability to Operate Digital Devices and Applications, Digital-Based Learning Planning, Use of Digital Media in the Teaching Process, Creativity in Developing Learning Media, Ability to Conduct Digital-Based Evaluations, Activeness in Technology-Based Professional Development, Digital Communication with Students and Parents, Digital Ethics and SecurityIndicators of the influence of digital media in the learning process; **Indicators**: *Accessibility to Learning Materials, Increased Student Participation and Engagement, Effectiveness of the Learning Process, Digital Literacy Skills, Interaction between Teachers and Students, Innovation in Teaching Methods, Time and Cost Efficiency.* and to see the statistical analysis as contained in the following table;

Correlations

		indicators of teacher ability in using digital media	indicators of the influence of digital media in the learning process
indicators of teacher ability in using digital media	Pearson Correlation	--	
	N	25	
indicators of the influence of digital media in the learning process	Pearson Correlation	.904**	--
	Sig. (2-tailed)	.000	
	N	25	25

**. Correlation is significant at the 0.01 level (2-tailed).

furthermore, regarding student learning outcomes,



Correlations

		learning outcomes (sub-indicators; 12)	digital media indicators in student learning outcomes (sub-indicators; 32)
learning outcomes (sub-indicators; 12)	Pearson Correlation	--	
	N	40	
digital media indicators in student learning outcomes (sub-indicators; 32)	Pearson Correlation	.880**	--
	Sig. (2-tailed)	<,001	
	N	40	40

**. Correlation is significant at the 0.01 level (2-tailed).

learning outcome indicators; mastery of knowledge (cognitive), learning attitudes and behavior (affective), skills (psychomotor), critical thinking and problem solving skills **Indicators**: Improved Academic Grades, Deeper Conceptual Understanding, Critical Thinking and Problem-Solving Skills, Learning Independence, Increased Creativity and Innovation, Digital Literacy Skills, Active Learning, Learning Retentio

However, the influence of digital media on learning also presents challenges, such as disparities in technology access, impaired concentration due to digital distractions, and the need for digital literacy skills for teachers and students. Therefore, the effectiveness of digital media depends heavily on infrastructure readiness, educator competence, and strategies for utilizing it in the learning process.(Aparecido Urso Silva et al., 2024; Timotheou et al., 2023).Overall, digital media has a significant impact on enriching the learning experience and improving the quality of learning when integrated appropriately and wisely into the educational curriculum.

Supporting and inhibiting factors in the digital transformation process

The digital transformation of Islamic education at Islamic Junior High Schools (MTs) in Jambi City is a response to developments in information technology and the demands of 21st-century learning. This process involves not only the adoption of digital technology but also changes in pedagogical paradigms, curricula, and learning culture within the madrasah environment. In this transformation process, several supporting and inhibiting factors influence the effectiveness of the overall implementation of digital learning.(Yang et al., 2021). Based on interviews and field observations of digitalization in the learning process at Islamic Junior High Schools in Jambi City, supporting factors include: 1) Government and Ministry of Religious Affairs policies.Regulatory support from the Ministry of Religious Affairs of the Republic of Indonesia, which encourages madrasah digitalization through programs such as Madrasah Digital, is a crucial factor. These programs provide guidance, training, and supporting resources for digital transformation.2) Availability of Technological Infrastructure: Several madrasahs in Jambi City have adequate internet access, ICT devices such as projectors and laptops, and digital learning platforms (such as Google Classroom or madrasah e-learning), which enable the implementation of digital learning methods.3) Teacher Commitment and Readiness, Islamic Religious Education (PAI) teachers who have sufficient digital literacy and a passion for continuous learning are the main drivers in technology adoption. This commitment is reflected in active participation in ICT training and learning media innovation. 4) Parental and School Committee Support, Parental involvement in supporting technology-based learning at home—for example by providing gadgets or internet quotas—contributes to the success of the digital transformation process. 5) Adaptive Needs during the Pandemic, the

COVID-19 pandemic has become a momentum for accelerating the digitalization of education. Many madrasas have begun to use online platforms as an alternative solution, which has then become a new habit in pedagogical practice. Furthermore, Inhibiting Factors include; a) Infrastructure Gap, Not all MTs in Jambi City have adequate technological facilities. There are still madrasas that experience limited internet networks, hardware, or even stable electricity, especially in remote areas. b) Low Digital Literacy of Teachers and Students, Some teachers and students still face challenges in operating digital technology effectively. Lack of ongoing training is a barrier to mastering digital tools and platforms. c) Conventional Learning Culture: The persistence of traditional teaching approaches, such as one-way lectures and memorization, makes some teachers reluctant to switch to more interactive and project-based digital learning models. d) Budgetary Constraints: Digital transformation requires significant investment, including equipment procurement, training, and learning platform subscriptions. Some madrasas face funding constraints, complicating this process. e) Lack of Contextual Curriculum and Digital ContentThe lack of digital content relevant to the local context and Islamic values in madrasas forces teachers to develop their own materials, which requires additional time and competency.Based on the description above, digital transformation in Islamic education at Madrasah Tsanawiyah (Islamic junior high school) in Jambi City is a complex and dynamic process. The success of this transformation is largely determined by the synergy between policies, infrastructure, human resource capacity, and support from various parties. Overcoming existing obstacles and maximizing supporting factors are strategic steps to realizing relevant, effective, and meaningful Islamic learning in the digital era.

Teacher and student perceptions of the use of digital technology in Islamic Education learning

The digital transformation in education has brought significant changes to learning methods and approaches, including in Islamic Religious Education (PAI). Amidst the increasingly strong digitalization trend, teacher and student perceptions are key factors in determining the success of digital technology implementation in the classroom, particularly in the context of learning in Islamic Junior High Schools (MTs). Based on interviews with several teachers, the Teacher Perceptions survey revealed that most Islamic Religious Education (PAI) teachers in Madrasah Tsanawiyah (MTs) are beginning to show an open attitude toward the use of digital technology as part of learning innovation. They acknowledge that technology can improve the effectiveness of material delivery, expand learning resources, and facilitate interaction with students. Through media such as learning videos, interactive presentations, and e-learning platforms, Islamic material previously presented conventionally can now be explained in a more engaging and easily understood manner by students.(Abdulrahaman et al., 2020; Gan et al., 2015) Based on interviews and observations of teacher and student perceptions regarding the use of digital technology in Islamic education learning in the field, this indicator aims to measure the extent to which teachers and students understand, accept, and respond to the use of digital technology in the learning process, particularly in the context of Islamic education. In today's digital era, the use of technology is no longer an option but rather a pressing necessity to make the learning process more effective, engaging, and relevant to current developments.From the teacher perspective, perceptions can include the extent to which they feel supported by digital technology, their confidence in its effectiveness, and their readiness to integrate technology into Islamic education learning methods. Positive teacher perceptions are typically reflected in their openness to technology training, digital-based learning innovations (such as the use of digital Quran applications, learning videos, and e-learning platforms), and their ability to facilitate online and hybrid learning.Meanwhile, from the student perspective, perceptions include the extent to which they feel motivated, better understand the material, and feel comfortable using digital technology during Islamic education learning. These perceptions are also related to accessibility, students' digital skills, and their views on the appropriateness of Islamic content presented digitally.

However, this positive perception is also accompanied by challenges experienced by teachers, such as limited technological proficiency, lack of ongoing training, and concerns about the erosion of spiritual values in digital learning processes that are too technology-oriented. Some teachers also believe that not all Islamic Religious Education (PAI) materials are suitable for online delivery, especially those of

a practical nature such as worship or tajwid.Furthermore, based on field observations, Student Perceptions indicate that, from their perspective, the use of digital technology in Islamic Religious Education (PAI) learning is generally received enthusiastically. Students feel more engaged and motivated when material is presented through visual media or interactive digital platforms. They also feel freer to explore religious material through the internet, Islamic preaching videos, and widely available Islamic apps.However, not all students have equal access to digital devices and a stable internet connection, resulting in some feeling left behind in the learning process. Furthermore, some students feel that digital learning lacks the spiritual nuance they typically experience during face-to-face learning with a teacher.

Based on the description above, both teachers and students generally have a positive perception of the use of digital technology in Islamic Religious Education (PAI) learning. They recognize the technology's significant potential to support material understanding and increase learning participation. However, this perception is also accompanied by concerns and obstacles that require attention, such as infrastructure readiness, digital competency training, and the preservation of Islamic values in a modern learning context.For digital transformation in Islamic Religious Education (PAI) learning to truly have a positive impact, a balanced approach is needed between the use of technology and the strengthening of spiritual aspects, as well as support from various parties to create a fair, inclusive, and meaningful digital ecosystem.

The influence of digital transformation on the effectiveness of Islamic Religious Education learning at MTs in Jambi City

Digital transformation in education has become inevitable in the modern era, including in Islamic Junior High Schools (MTs) in Jambi City. Along with the development of information and communication technology, Islamic Religious Education (PAI) learning has begun to shift from conventional methods to a more interactive, flexible, and digital-based approach. This change has had a significant impact on the effectiveness of the learning process, based on the results of interviews, field observations and theoretical reviews, where the influence of the use of digital media in the learning process (Azzahra et al., 2022; Rohmadani et al., 2024).Based on the table above,1). Increased Access and Availability of Learning Materials, One of the main impacts of digital transformation is increased access for students and teachers to a more diverse and rich range of learning resources. Through online learning platforms, instructional videos, Islamic applications, and educational websites, students at MTs can learn PAI material not only from textbooks but also from a variety of digital media that are more engaging and easy to understand.Teachers are also facilitated in developing teaching materials, as they can utilize various digital tools to present material in a more visual and contextual manner. This encourages more active, exploration-based learning, ultimately enhancing students' understanding of Islamic values.2). Increasing Student Interactivity and Engagement, Digital transformation also has a positive impact on student engagement during the learning process. With platforms like Google Classroom, Zoom, WhatsApp Groups, or the madrasah Learning Management System (LMS), interactions between teachers and students become more dynamic, even outside of class hours.Technology-based learning models encourage students to be more independent in their learning, actively participate in discussions, and more easily ask questions or engage in dialogue about Islamic Religious Education (PAI) material. This interactivity creates a more collaborative learning environment that is responsive to students' needs.3). Time Efficiency and Learning Management, The use of technology also impacts efficiency in time management and learning administration. Teachers can share materials, assignments, and assessments digitally, saving time and effort. Furthermore, students can access materials anytime and anywhere, making the learning process more flexible.Features such as online quizzes, discussion forums, and interactive videos also help teachers evaluate student understanding quickly and accurately. This efficiency has a positive impact on the quality of learning, making it more measurable and targeted.4). Challenges to Effectiveness: The Digital Divide and Spiritual Values,Despite its numerous benefits, digital transformation also presents its own challenges that impact the effectiveness of Islamic Religious Education (PAI) learning. One major challenge is the digital divide. Not all students have personal devices or adequate internet access. This results in inequalities in material acquisition and learning participation.

Furthermore, there are concerns that the overly dominant use of technology could diminish the spiritual nuance and direct role models in Islamic Religious Education (PAI) learning. Religious education is not only about transferring knowledge, but also about instilling morals and character development, which in some cases is still more effective through a face-to-face approach and direct role modeling from teachers.Based on the above description, digital transformation has had a significant impact on increasing the effectiveness of Islamic Religious Education learning at Madrasah Tsanawiyah (Islamic junior high school) in Jambi City. Technology helps enrich learning resources, increases student engagement, and provides flexibility in learning management. However, challenges such as limited access to technology and the need for a spiritual approach that addresses students' affective aspects remain a primary concern.Therefore, digital transformation strategies must be implemented in a balanced and contextual manner integrating technology without neglecting the fundamental values of Islamic education itself.

CONCLUSION

This study found that the digital pedagogical transformation at Islamic Junior High Schools (Madrasah Tsanawiyah) in Jambi City has had a significant positive impact on the learning process, but also presents challenges that need to be addressed systematically for the transformation to be optimal. Some specific conclusions are: 1) Increased Access and Efficiency.The use of digital tools (such as online learning platforms, learning videos, interactive quizzes, and educational applications) facilitates access to materials, accelerates the delivery process, and allows students flexibility in learning time. 2) Changing Teacher Roles.Teachers are no longer simply direct transmitters of material, but rather function as digital facilitators—designing materials, guiding the use of technology, and managing student interactions through digital media. This requires increased teacher digital competency. 3) Student Engagement and Motivation.With the use of more interactive and engaging digital methods, student motivation increases. They are more active, responsive, and tend to be more engaged in learning than with traditional methods alone. 4) Incorporation of Islamic Values.Although digital transformation brings elements of modernity, research shows that internalizing Islamic values remains a crucial concern. Efforts to maintain digital content in line with Islamic values (ethics, morals, and spirituality) are part of the transformation process that must be integrated from the planning stage.

Meanwhile, regarding Obstacles and Limitations, some of the main obstacles that arise are: Limited technological infrastructure (internet access, computer devices or gadgets); Differences in digital capabilities between teachers and students; not all parties are ready or have adequate digital literacy; Difficulties in evaluating non-cognitive aspects such as spirituality or character in digital learning; Resistance to the change from traditional to digital methods within the educational community or school. 5) Need for Strategy and Support: To optimize this digital pedagogical transformation, clear policy support, ongoing training for teachers, infrastructure investment, and learning planning that includes a balance between digital and traditional are needed. In addition, collaboration between stakeholders (schools, government, parents) is crucial so that digital learning is not just an emergency alternative, but an integral part of the education system.

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